

SEQUENCE LISTING

<110> Takaiwa, Fumio
Takagi, Hidenori

<120> METHOD OF ACCUMULATING ALLERGEN-SPECIFIC T CELL ANTIGEN
DETERMINANT IN PLANT AND PLANT HAVING THE ANTIGEN
DETERMINANT ACCUMULATED THEREIN

<130> 201487/1160

<140>

<141>

<150> JP 2003-120639

<151> 2003-04-24

<150> PCT/JP04/005938

<151> 2004-04-23

<160> 11

<170> PatentIn Ver. 2.1

<210> 1

<211> 96

<212> PRT

<213> Homo sapiens

<400> 1

Gly Ile Ile Ala Ala Tyr Gln Asn Pro Ala Ser Trp Lys Ser Met Lys
1 5 10 15

Val Thr Val Ala Phe Asn Gln Phe Gly Pro Asp Ile Phe Ala Ser Lys
20 25 30

Asn Phe His Leu Gln Lys Asn Lys Leu Thr Ser Gly Lys Ile Ala Ser
35 40 45

Cys Leu Asn Tyr Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro
50 55 60

Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe
65 70 75 80

Asn Val Glu Gln Phe Ala Lys Leu Thr Gly Phe Thr Leu Met Gly Arg
85 90 95

<210> 2

<211> 192

<212> PRT

<213> Homo sapiens

<400> 2

Gly Ile Ile Ala Ala Tyr Gln Asn Pro Ala Ser Trp Lys Ser Met Lys
1 5 10 15

Val Thr Val Ala Phe Asn Gln Phe Gly Pro Asp Ile Phe Ala Ser Lys
20 25 30

Asn Phe His Leu Gln Lys Asn Lys Leu Thr Ser Gly Lys Ile Ala Ser
35 40 45

Cys Leu Asn Tyr Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro
50 55 60

Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe
65 70 75 80

Asn Val Glu Gln Phe Ala Lys Leu Thr Gly Phe Thr Leu Met Gly Arg
85 90 95

Gly Ile Ile Ala Ala Tyr Gln Asn Pro Ala Ser Trp Lys Ser Met Lys
100 105 110

Val Thr Val Ala Phe Asn Gln Phe Gly Pro Asp Ile Phe Ala Ser Lys
115 120 125

Asn Phe His Leu Gln Lys Asn Lys Leu Thr Ser Gly Lys Ile Ala Ser
130 135 140

Cys Leu Asn Tyr Gly Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro
145 150 155 160

Ser Gly Lys Tyr Glu Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe
165 170 175

Asn Val Glu Gln Phe Ala Lys Leu Thr Gly Phe Thr Leu Met Gly Arg
180 185 190

<210> 3
<211> 24
<212> PRT
<213> Oryza sativaL. cv Manngetsumochi

<400> 3
Met Ala Ser Ser Val Phe Ser Arg Phe Ser Ile Tyr Phe Cys Val Leu
1 5 10 15

Leu Leu Cys His Gly Ser Met Ala
20

<210> 4
<211> 24
<212> PRT
<213> Oryza sativaL. cv Manngetsumochi

<400> 4
Met Ala Ser Ile Asn Arg Pro Ile Val Phe Phe Thr Val Cys Leu Phe
1 5 10 15

Leu Leu Cys Asp Gly Ser Leu Ala
20

<210> 5
<211> 23
<212> PRT
<213> Oryza sativaL. cv Manngetsumochi

<400> 5
Met Ala Ser Lys Val Val Phe Phe Ala Ala Ala Leu Met Ala Ala Met
1 5 10 15

Val Ala Ile Ser Gly Ala Gln
20

<210> 6
<211> 3350
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Artificially

constructed DNA sequence

<220>

<221> CDS

<222> (2333) .. (2713)

<400> 6

acagattctt gctaccaaca acttcacaaa gtagtagtca accaaaacta tgctaaggaa 60
tcacctcact tccgcccatg accgtgagca cgactgttca aacagtttgt taatctctac 120
aaagaaggta cactttacct acacaacgcc actaacctga gttaccagc ccatgcaaaa 180
tagccacgtc ttgtgactta agggatttcg cgacaaggca tttcgaaagc ccacacaagg 240
acaccttatg aaaactggag ggggtcccaca gaccaacaac aagttaggtc ccaaaccatg 300
ttgtgccagg aaaaatccaa ggggtcctcc ccaacaccac cccgacaaat ccacttgtcc 360
attggcatca agatttgctt gacctagcta attactcagc caggcatgtc acaattcacc 420
catgtggtca cacatgttat ggttggtatga aattctaaag gaatcgggtc atatgagcaa 480
gaccgagaaa ccataccacc agtacttcta ccgaaatacg agtttagtaa actcatttgt 540
tttcaaggca cccgaccag gtgtgtcggg ttttccaggg attttgtaaa cccaagtttt 600
acccatagtt gatcattcaa attttgagga gggtcattgg tatccgtacc tgagggcacg 660
aatactgaga cctagcattg tagtcgacca aggaggttaa tgcagcaatt gtaggtgggg 720
cctgttggtt atattgcaaa ctgcggccaa catttcatgt gtaatttaga gatgtgcatt 780
ttgagaaatg aaatacttag tttcaaatta tgggctcaaa ataatcaaag gtgacctacc 840
ttgcttgata tcttgagctt cttcctcgta ttccgcgac taggactctt ctggctccga 900
agctacacgt ggaacgagat aactcaacaa aacgaccaag gaaaagctcg tattagttag 960
tactaagtgt gccactgaat agatctcgat ttttgaggaa ttttagaagt tgaacagagt 1020
caatcgaaca gacagttgaa gagatatgga ttttctaaga ttaattgatt ctctgtataa 1080
agaaaaaaag tattattgaa ttaaattgaa aaagaaaaag gaaaaagggg atggcttctg 1140
ctttttgggc tgaaggcggc gtgtggccag cgtgctgcgt gcggacagcg agcgaacaca 1200
cgacggagca gctacgacga acgggggacc gagtggaccg gacgaggatg tggcctagga 1260

cgagtgcaca aggctagtgg actcgggtccc cgcgcggtat cccgagtggg ccaactgtctg 1320
 caaacacgat tcacatagag cgggcagacg cgggagccgt cctaggtgca ccggaagcaa 1380
 atccgtcgcc tgggtggatt tgagtgcac ggcccacgtg tagcctcaca gctctccgtg 1440
 gtcagatgtg taaaattatc ataatatgtg tttttcaaag agttaataa tatatatagg 1500
 caagttatat gggtaataa gcagtaaaaa ggcttatgac atggtaaaat tacttacacc 1560
 aatatgcctt actgtctgat atattttaca tgacaacaaa gttacaagta cgtcatttaa 1620
 aaatacaagt tacttatcaa ttgtagtgta tcaagtaaat gacaacaaac ctacaaattt 1680
 gctattttga aggaacactt aaaaaaatca ataggcaagt tatatagtca ataaactgca 1740
 agaaggctta tgacatggaa aaattacata caccaatatg ctttattgtc cggtatatatt 1800
 tacaagacaa caaagttata agtatgtcat ttaaaaatac aagttactta tcaattgtca 1860
 agtaaatgaa aacaacaccta caaatttggt attttgaagg aacacctaaa ttatcaaata 1920
 tagcttgcta cgcaaaatga caacatgctt acaagttatt atcatcttaa agttagactc 1980
 atcttctcaa gcataagagc tttatgggtg aaaaacaaat ataatgacaa ggcaaagata 2040
 catacatatt aagagtatgg acagacattt cttaacaaa ctccatttgt attactccaa 2100
 aagcaccaga agtttgtcat ggctgagtca tgaaatgtat agttcaatct tgcaaagttg 2160
 cctttccttt tgtactgtgt ttaacacta caagccatat attgtctgta cgtgcaacaa 2220
 actatatcac catgtatccc aagatgcttt tttattgcta tataaactag cttgggtctgt 2280
 ctttgaactc acatcaatta gcttaagttt ccataagcaa gtacaaatag ct atg gcg 2338
 Met Ala

1

agt tcc ggt ttc tct cgg ttt tct ata tac ttt tgt gtt ctt cta tta 2386
 Ser Ser Gly Phe Ser Arg Phe Ser Ile Tyr Phe Cys Val Leu Leu Leu
 5 10 15
 tgc cac ggt tct atg gcc cag ccc atg ggc atc atc gca gct tac caa 2434
 Cys His Gly Ser Met Ala Gln Pro Met Gly Ile Ile Ala Ala Tyr Gln
 20 25 30
 aat cca gca agc tgg aag agt atg aag gtt aca gtt gca ttc aac caa 2482

Asn	Pro	Ala	Ser	Trp	Lys	Ser	Met	Lys	Val	Thr	Val	Ala	Phe	Asn	Gln	
35					40				45					50		
ttc	ggt	cct	gat	atc	ttt	gct	agc	aag	aat	ttc	cac	ctc	cag	aaa	aat	2530
Phe	Gly	Pro	Asp	Ile	Phe	Ala	Ser	Lys	Asn	Phe	His	Leu	Gln	Lys	Asn	
				55				60					65			
aag	ctc	aca	agt	ggc	aag	att	gca	agc	tgc	ttg	aac	tat	gga	ttg	gtt	2578
Lys	Leu	Thr	Ser	Gly	Lys	Ile	Ala	Ser	Cys	Leu	Asn	Tyr	Gly	Leu	Val	
			70				75				80					
cat	gta	gct	aac	aat	aac	tat	gat	cca	agc	ggt	aag	tat	gag	ggt	ggc	2626
His	Val	Ala	Asn	Asn	Asn	Tyr	Asp	Pro	Ser	Gly	Lys	Tyr	Glu	Gly	Gly	
			85				90				95					
aac	atc	tac	act	aag	aag	gaa	gca	ttc	aac	gta	gag	caa	ttt	gca	aag	2674
Asn	Ile	Tyr	Thr	Lys	Lys	Glu	Ala	Phe	Asn	Val	Glu	Gln	Phe	Ala	Lys	
	100					105				110						
ctc	aca	ggc	ttc	act	ctc	atg	gga	cgc	aag	gac	gag	ttg	aagagctctg			2723
Leu	Thr	Gly	Phe	Thr	Leu	Met	Gly	Arg	Lys	Asp	Glu	Leu				
	115				120			125								
taattgagaa	ctagtatcgg	cgtagagtaa	aataaaacac	cacaagtatg	acacttggtg											2783
gtgattctgt	tcgatatcag	tactaaataa	aggttacaaa	cttcttaatt	ttcctacttc											2843
atgccatgga	tattccatta	tggactatag	tggacagggc	cggctctatga	ttttgagggc											2903
cctaggaact	catcgcgatg	ggcctcaagc	tatatataaa	atttattgat	atatatagac											2963
gctaatttta	cttgcaaaat	gaaaacaaat	acatctatat	attaaattta	acattcctgg											3023
taattatcaa	gaaataaaat	cgaccaaaat	aacaatatat	ttgtaacttg	gaactaatat											3083
aattatttat	taacttaatg	aagaatagaa	ccccgtcata	tccattgctt	cctatgaaaa											3143
gatacttctt	cgggtatttc	ttgatgcaaa	atcataaaga	acggtattaa	gatcaatagt											3203
gtccaagata	tccttctcga	ttgagcacat	agccaagcca	tttaacctta	tttgcgacag											3263
ttgatctcaa	atagtttttc	aacaacttca	attttgataa	acttattttca	gctgaagcta											3323
ccatcatagg	taaagttaag	agaattc														3350

<210> 7

<211> 127

<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence: Artificially
constructed DNA sequence

<400> 7

Met Ala Ser Ser Gly Phe Ser Arg Phe Ser Ile Tyr Phe Cys Val Leu
1 5 10 15

Leu Leu Cys His Gly Ser Met Ala Gln Pro Met Gly Ile Ile Ala Ala
20 25 30

Tyr Gln Asn Pro Ala Ser Trp Lys Ser Met Lys Val Thr Val Ala Phe
35 40 45

Asn Gln Phe Gly Pro Asp Ile Phe Ala Ser Lys Asn Phe His Leu Gln
50 55 60

Lys Asn Lys Leu Thr Ser Gly Lys Ile Ala Ser Cys Leu Asn Tyr Gly
65 70 75 80

Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro Ser Gly Lys Tyr Glu
85 90 95

Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe Asn Val Glu Gln Phe
100 105 110

Ala Lys Leu Thr Gly Phe Thr Leu Met Gly Arg Lys Asp Glu Leu
115 120 125

<210> 8

<211> 127

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Protein
encoded by artificially constructed DNA sequence

<400> 8

Met Ala Ser Ser Gly Phe Ser Arg Phe Ser Ile Tyr Phe Cys Val Leu
1 5 10 15

Leu Leu Cys His Gly Ser Met Ala Gln Pro Met Gly Ile Ile Ala Ala
20 25 30

Tyr Gln Asn Pro Ala Ser Trp Lys Ser Met Lys Val Thr Val Ala Phe
 35 40 45

Asn Gln Phe Gly Pro Asp Ile Phe Ala Ser Lys Asn Phe His Leu Gln
 50 55 60

Lys Asn Lys Leu Thr Ser Gly Lys Ile Ala Ser Cys Leu Asn Tyr Gly
 65 70 75 80

Leu Val His Val Ala Asn Asn Asn Tyr Asp Pro Ser Gly Lys Tyr Glu
 85 90 95

Gly Gly Asn Ile Tyr Thr Lys Lys Glu Ala Phe Asn Val Glu Gln Phe
 100 105 110

Ala Lys Leu Thr Gly Phe Thr Leu Met Gly Arg Lys Asp Glu Leu
 115 120 125

<210> 9

<211> 1474

<212> DNA

<213> Oryza sativa

<400> 9

tacagggttc cttgcgtgaa gaaggggtggc ctgcggttca ccattaacgg tcacgactac 60
 ttccagctag tactgggtgac caacgtcgcg gcggcagggt caatcaagtc catggagggt 120
 atggggttcca acacagcgga ttggatgccg atggcacgta actggggcgc ccaatggcac 180
 tcaactggcct acctcaccgg tcaaggtcta tcctttaggg tcaccaacac agatgaccaa 240
 acgctcgtct tcaccaacgt cgtgccacca ggatggaagt ttggccagac atttgcaagc 300
 aagctgcagt tcaagtgaga ggagaagcct gaattgatac cggagcgttt cttttgggag 360
 taacatctct ggttgccctag caaacatatg attgtatata agtttcgttg tgcgtttatt 420
 ctttcggtgt gtaaaataac atacatgctt tcctgatatt ttcttgata tatgtacaca 480
 cacacgacaa atccttccat ttctattatt attgaacaat ttaattgcga gggcgagtac 540
 ttgtctgttt accttttttt tttcagatgg cattttatag tttaaccttt catggaccgg 600
 cagtagttct aaccatgaat gaaaagaaat catagtccac accacgcagg gacattgtgg 660
 tcattttaga caagacgatt tgattaatgt cttgtatgat atggtcgaca gtgaggacta 720
 acaaacatat ggcataTTTT attaccggcg agttaaataa atttatgtca cagtaataaa 780
 ctgcctaata aatgcacgcc agaaaatata atgataaaaa aaagaaaaga tacataagtc 840
 cattgcttct acttttttaa aaattaaatc caacattttc tatttttttg tataaacttg 900
 gaagtactag ttggatatgc aaaatcatct aacctccata tatttcatca atttgtttac 960
 ttacatatg ggagaggata gtatgtcaaa gaaatgaca acaagcttac aagtttctta 1020
 ttttaaaagt tccgctaact tatcaagcat agtgtgccac gcaaaactga caacaaacca 1080
 acaaatttaa ggagcgccta acttatcatc tatgacatac cgcacaaaat gataacatac 1140
 tagagaaact ttattgcaca aaaggaaatt tatccataag gcaaaggaac atcttaaggc 1200
 ttggatata catttaccaa caagcattgt ttgtattacc cctaaagcgc aagacatgtc 1260
 atccatgagt catagtgtgt atatctcaac attgcaaagc tacctttttt ctattatact 1320
 tttcgcatta taggctagat attatctata catgtcaaca aactctatcc ctacgtcata 1380

tctgaagatt cttttcttca ctatataagt tggcttcctt gtcattgaac tcacatcaac 1440
cagcccaagt ttccaataac atcctcaa at agct 1474

<210> 10
<211> 824
<212> DNA
<213> *Oryza sativa*

<400> 10
actggataat tataatatca gttaaaattg aaaataatgc aacttcatac ttgcatgggtg 60
tcagtagtgc ctgcctaaga aatgtgtctt gtcataatat gattacatga aatatgttta 120
cttcctcggt tctctttatt tgtaagataa agaactagat atgtggaaag taggatagca 180
aagagtatgg ccaaactcta atctttgctt ttttttttgg gatggacca aaatttggtt 240
ctcctttact tctttccctt tacaacaatg ttctttactt ccaattctta ttaacaaaac 300
tccaaataca tgccaaactg catatgtatg tatgtctatta aggcacattt acaaagctcc 360
aagtttacct actcaatcat tcacatatgg cgatgactca aactcttaat tgttatctgg 420
taagctgtga cttgtgtaac acattctaca agtcccatac gaattctgtt cacaaaagtt 480
tctttgtcca gtcataatt taaaaaactg caaatgcca aagcaatctg gcacaacctt 540
atcatcatat tttctttcca cgcattaaag cactggcaga attatctttg tgtagatatt 600
ccaaaagtat tgggtgaata aatgtccaaa taaattccat gcctcatgat ttccagctta 660
tgtggcctcc actaggtggg tttgcaaagg ccaaactctt tcctggctta cacagctacc 720
agcatgtata aataggcccc taggcaacca ttattccatc atcctcaaca atattgtcta 780
caccatctgg aatcttggtt aacactagta ttgtagaatc agca 824

<210> 11
<211> 931
<212> DNA
<213> *Oryza sativa*

<400> 11
gatcttttaa ccgtgctacg ctgggttaat tagcgatggg gcaggtcacg tacccaaatt 60
tcttcactgt tggatcaact agagtagtta aacgagggca tgtgatgaag gctagctatt 120
tgaaattttc caattatccc tgcataagtc aggctacaat agcacctgga ctacatgcag 180
ggattacaaa ataggtggta accacattta ccgcgttaac cctatcaa at tcaaataaat 240
tttaaaagta atttgatttt tttaataaat tttgtatggg ttctcaagct ttattttggg 300
taccgtgctt actgcgaggg caatgggaaa cctcactag aagttgcacc tgttcttgtc 360
tgtgcaccat atcatgttga atcatgtgcg ttgtgtcttt cggaagaacc gatttactac 420
atgactcatc aattccactt tacgtatcaa aaggtttggt atgggggcaa tgcttttgtg 480
aaattaaatt tttattttgc gtcaagttgt atctagttaa acactaccta cctaccatta 540
caaaacctca ttccacaaaa cgatgcatct agataaaaaa tatgacatgt aaagtgagta 600
atgactcatg tttattatca aaaatcgata acaatcaa at gatataggta gtaaagtacc 660
tttgaaatgg catgtccaag tatgtgtagc tccacctagc acaatatccc aagtgatcat 720
cataaaaggc atacaaatac aagcagccga tgatgcacac aagaaacaac acaaattgca 780
caaaaccaa agcaaccgat gccttgagca tagagatcat gctattccca ctataaatac 840
aatgcacca tatcaagatg ctctcacc ttactgaaaa atcacaaca tcaaacggtt 900
ataagagttc tctagcatcc atcacatagc c 931